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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/602,283	06/23/2003	Jeffrey A. East	MSFT-1742 (301617.01)	9118
41505 7590 10/18/2007 WOODCOCK WASHBURN LLP (MICROSOFT CORPORATION) CIRA CENTRE, 12TH FLOOR 2929 ARCH STREET PHILADELPHIA, PA 19104-2891			EXAMINER PARDO, THUY N	
			ART UNIT 2168	PAPER NUMBER
			MAIL DATE 10/18/2007	DELIVERY MODE PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

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Office Action Summary	Application No.	Applicant(s)	
	10/602,283	EAST ET AL.	
	Examiner	Art Unit	
	Thuy N. Pardo	2168	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 08 August 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-46 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-46 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. Applicant's Amendment filed on August 08, 2007 in response to Examiner's Office Action has been reviewed. Claims 1-46 are pending in the application. Claims 1, 22, 25 and 26 are independent claims. This Office Action is made Non-Final.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1-46 are rejected under 35 U.S.C. 103(a) as being unpatentable over Draper et al. (Hereinafter "Draper") US Patent No. 5,924,096 in view of Lee et al. (Hereinafter "Lee") US Patent No. 6,078,930.

Referring to claim 1, Draper teaches the invention substantially as claimed, comprising:
identifying the point when the divergence in transaction history occurred using the database and database copy logs, the point represented by a fail over log sequence number (FOLSN) [514-518 of fig. 5; a list of recent events constrained, col. 7, lines 33-52]; and
processing the database log records created after the divergence in transaction history to populate from D1 to D1' or from D1' to D changes and identified content, the log records having

log sequence numbers for use in processing [the step 516 may ensure that only events which modify data item 202 contents are placed in the event list, col. 7, lines 45-50].

However, Draper does not explicitly teach two different log records of two databases, D1 and its copies, D1' although it has the same functionality of synchronizing copies stored in a database and in a cache of a distributed system by comparing timestamps and tags. Lee teaches determining a safe recovery time value after a failure of a node by comparing its current clock time value with most recent crash node time stamp value stored in the logs of each node [ab; col. 4, lines 28-44; col. 9, lines 62 to col. 10, lines 18].

Therefore, it would have been obvious to one of ordinary skill in the Data Processing art at the time of the invention to add the feature of Lee to the system of Draper as an essential means to determining the latest timestamp for logged changes [col. 9, lines 25-43].

Referring to claim 2, Draper and Lee teach the invention substantially as claimed. Draper further teaches setting a maximum page log sequence number (MPLSN) to equal the FOLSN [col. 7, lines 53-58; claim 9].

Referring to claim 3, Draper and Lee teach the invention substantially as claimed. Draper further teaches performing a scan of the log of either of D1 or D1' to obtain a first log record that occurs after the FOLSN until an end-of-log on either of D1 or D1' is reached [col. 8, lines 35-43].

Referring to claim 4, Draper and Lee teach the invention substantially as claimed. Draper further teaches checking to determine if there is a log record to analyze [col. 11, lines 26-42].

Referring to claim 5, Draper and Lee teach the invention substantially as claimed. Draper further teaches comprising replaying log records on D1 starting with log records occurring before an identified last checkpoint before the FOLSN and continuing to the FOLSN [col. 8, lines 44-54; col. 12, lines 28-44].

Referring claim 6, Draper and Lee teach the invention substantially as claimed. Draper further teaches removing the log records after the FOLSN from either of D1 or D1'.

Referring claim 7, Draper and Lee teach the invention substantially as claimed. Draper further teaches copying log records from the FOLSN to the MPLSN from D1 to D1' or from D1' to D1 [col. 13, lines 56-64].

Referring to claim 8, Draper and Lee teach the invention substantially as claimed. Draper further teaches performing the operations recorded from the FOLSN to the MPLSN on D1 or D1' pages [ab; col. 5, lines 29-31].

Referring to claim 9, Draper and Lee teach the invention substantially as claimed. Draper further teaches preventing the use of D1 or D1' until the operations of claim 8 are completed

[these checkpoints prevent a later update from being merged into an earlier one when the checkpoint falls between the two updates, ab; col. 10, lines 51-67].

Referring to claim 10, Draper and Lee teach the invention substantially as claimed.
Draper further teaches clearing the MPLSN value [ab].

Referring to claim 11, Draper and Lee teach the invention substantially as claimed.
Draper further teaches recovering D1 and/or D1' [col. 5, lines 19-27; ab].

Referring to claim 12, Draper and Lee teach the invention substantially as claimed.
Draper further teaches catching up D1 with D1' or vice versa [received by a cache or other database copy from a master database copy, col. 5, lines 28-39].

Referring to claim 13, Draper and Lee teach the invention substantially as claimed.
Draper further teaches performing a check to determine if the log record occurring after the FOLSN is a page format log record [col. 11, lines 26-42; col. 12, lines 29-44].

Referring to claim 14, Draper and Lee teach the invention substantially as claimed.
Draper further teaches performing a check to determine if the log record occurring after the FOLSN is a page update log record [col. 10, lines 22-50].

Referring to claim 15, Draper and Lee teach the invention substantially as claimed. Draper further teaches comparing a previous page log sequence number (PPLSN) of the log record occurring after the FOLSN with the FOLSN [col. 9, lines 60 to col. 10, lines 21].

Referring to claim 16, Draper and Lee teach the invention substantially as claimed. Draper further teaches upon determining that the PPLSN is less than the FOLSN, retrieving the current contents of the D1 pages or D1', pages [col. 7, lines 43-52].

Referring to claim 17, Draper and Lee teach the invention substantially as claimed. Draper further teaches determining if the D1 pages or D1' pages are de-allocated [col. 12, lines 18-27; col. 12, lines 45-55].

Referring to claim 18, Draper and Lee teach the invention substantially as claimed. Draper further teaches sending a dummy page from D1 to D1' or from D1' to D1 with a page LSN (PLSN) field of the log record set in a current end-of-log (EOL) log sequence number on D1 or D1' [slave replicas, col. 5, lines 46-56].

Referring claim 19, Draper and Lee teach the invention substantially as claimed. Draper further teaches setting the value of the MPLSN to the value of the PLSN if the PLSN is larger than the MPLSN [col. 6, lines 49-60].

Referring to claim 20, Draper and Lee teach the invention substantially as claimed.
Draper further teaches obtaining the next log record [col. 11, lines 26-43].

Referring to claim 21, Draper and Lee teach the invention substantially as claimed.
Draper further teaches a computer readable medium having computer readable instructions to instruct a computer to perform the method [col. 4, lines 51 to col. 5, lines 2].

Referring to claim 22, it is an apparatus claim of claim 1, therefore, it is rejected under the same rationale.

Referring to claim 23, Draper and Lee teach the invention substantially as claimed.
Draper further teaches a computing application [an event, ab].

Referring to claim 24, Draper and Lee teach the invention substantially as claimed.
Draper further teaches comparing information comprises a computing application [col. 12, lines 4-17].

Referring to claims 25-46, all limitations of these claims have been addressed in the analysis of claims 1-24 above, and these claims are rejected on that basis.

Response to Arguments

3. Applicant's arguments with respect to claims 1-46 have been considered but are moot in view of the new ground(s) of rejection.

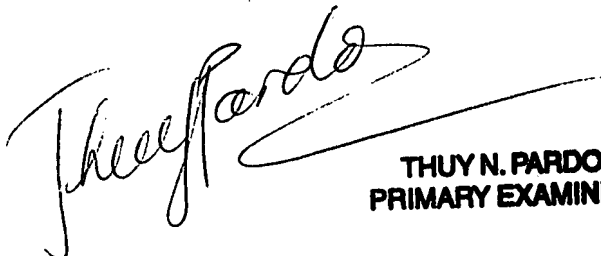
4. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Thuy N. Pardo whose telephone number is 571-272-4082. The examiner can normally be reached on Mon-Fri.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tim Vo can be reached on 571-272-3642. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Thuy N Pardo
Primary Examiner
Art Unit 2168

October 09, 2008



THUY N. PARDO
PRIMARY EXAMINER